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EXAMINER

LIANG, LEONARD S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/062,758	Applicant(s) ELGEE ET AL.	
	Examiner Leonard S Liang	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-22, 24-27 and 29-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-22, 24-27, and 29-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

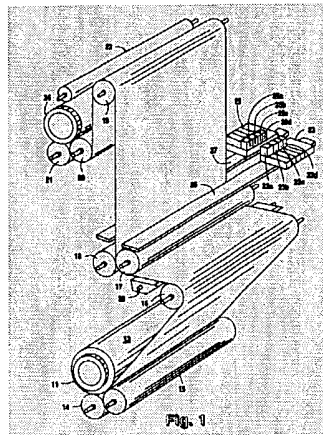
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 5, 8-11, 13-17, 19-20, 22, 24-27, and 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Meyers et al (US Pat 6463674).

Gandy et al discloses:

- {claim 1} An inkjet printing mechanism, a media support (figure 1); a bi-furcated carriage which scans an inkjet printhead across the printzone, a first portion of the carriage located on a first side of the media when in the printzone, a second portion of the carriage being located on a second side of the media when in the printzone (figure 1, reference 23, 25)



- {claim 11} the printhead directs ink droplets into the printzone and onto the media, and the heating element creates a heat zone at a surface of the media (figure 1; abstract)
- {claim 14} An inkjet printing mechanism, a printzone (figure 1); a first carriage located on a first side of the printzone, the first carriage supporting an inkjet printhead (figure 1, reference 23); a second carriage located on a second side of the printzone (figure 1, reference 25)
- {claim 15} the print media in the printzone has a print surface exposed to the printhead to receive ink therefrom, and has an opposing surface opposite the print surface (figure 1)
- {claim 16} the first side of the printzone faces the media print surface and wherein the second side of the printzone faces the media opposing surface (figure 1)
- {claim 17} the inkjet printhead projects ink droplets into the printzone as print imaging on media when in the printzone, the print imaging receiving heat energy

from the heat element (figure 1; abstract; column 3, lines 26-68; column 4, lines 1-4)

- {claim 20} the printing mechanism synchronously scans the first carriage and the second carriage to maintain a selected alignment therebetween (column 5, lines 60-63)
- {claim 22} A method of applying print imaging by ink droplet deposition on media and drying the print imaging, reciprocating a first carriage across the printzone; projecting from the first carriage ink droplets as the print imaging (figure 1); synchronously scanning a second carriage relative to the first carriage (column 5, lines 60-63)
- {claim 26} controllably advancing media in a feed direction through the printzone (figure 1)
- {claim 27} A printing method; placing media in a printzone for print imaging; reciprocating a first carriage across the printzone; projecting from the first carriage ink droplets as the print imaging (figure 1; column 3, lines 26-68; column 4, lines 1-6); synchronously scanning a second carriage relative to the first mentioned carriage (column 5, lines 60-63)
- {claim 31} A printing method; applying ink having an evaporable component to a print media (figure 1; abstract)
- {claim 33} the applying comprises scanning a printhead across the media (figure 1, reference 23, 25)

Art Unit: 2853

- {claim 37} advancing the media through the printzone between each of a series of the applying and the moving (figure 1)
- {claim 38} An inkjet printing mechanism; means for reciprocating a carriage relative to a printzone, printing means (figure 1; column 5, lines 49-63)
- {claim 41} the printing means comprises an inkjet printing device projecting ink droplets therefrom (figure 1, reference 23, 25)

Gandy et al differs from the claimed invention in that it does not disclose:

- {claim 1} a bi-furcated heating element supported by the carriage, a first portion of the heating element being carried by the first portion of the carriage, a second portion of the heating element being carried by the second portion of the carriage, the first and second heater elements being maintained in face-to-face relation across the print zone
- {claim 2} microwave heating element
- {claim 5} radio frequency heating element
- {claim 8} a stationary blower
- {claim 9} a radio frequency applicator
- {claim 10} a microwave applicator
- {claim 13} the first and second heating element portions define a gap therebetween, the gap comprising a heat zone generated by the heating element
- {claim 14} the first carriage supporting a first heater element portion; the second carriage holding a second heater element portion, the first and second heater

element portions forming a heater element and being maintained in face-to-face-opposition across the printzone

- {claim 19} the first and second heater element portions cooperatively form a microwave applicator
- {claim 22} projecting from a first heater element on the first carriage radiant energy applied as heat energy to the media; the second carriage holding a second heater element cooperative with the first heater element to generate and apply the heat energy to the media, the first and second carriage being maintained in face-to-face relation with the media interposed therebetween
- {claim 24} the first and second heater elements comprise a microwave heater
- {claim 25} the first and second heater elements comprise an RF heater
- {claim 27} projecting from a first heater element on the first carriage radiant energy applied as heat energy to the heat media; the second carriage holding a heater element cooperative with the heater on the first carriage to apply the heat energy to the media, the first and second carriage being maintained in face-to-face relation with the media interposed therebetween
- {claim 29} the first and second heater elements comprise a microwave heater
- {claim 30} the first and second heater elements comprise and RF heater
- {claim 31} thereafter, moving a heat zone across the media to accelerate evaporation of the evaporable component, the heat zone being generated by cooperative first and second heating elements moving synchronously and relative to the print media and cooperative to produce the heat zone, the first and second

heating elements being maintained in face-to-face relation with the print media
interposed therebetween

- {claim 32} the moving comprises scanning the first and second heating elements across the print media
- {claim 34} the heat zone using microwave heating produced cooperative by the first and second heating elements
- {claim 35} generating the heat zone at opposing surfaces of the media
- {claim 36} generating the heat zone from RF heating produced cooperative by the first and second heating elements
- {claim 38} means for applying heat energy to the media and supported by the carriage means, the means for applying heat energy being bifurcated and including cooperative first and second heater elements, the first heater element being positioned at a first side of the media and the second heater element being maintained in face-to-face opposition therewith at a second side of the media
- {claim 39} microwave energy source
- {claim 40} RF energy source

Meyers et al discloses:

- {claim 1} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)

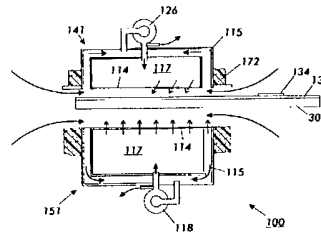


FIG. 3

- {claim 2} microwave heating element (column 1, line 29)
- {claim 5} radio frequency heating element (column 1, lines 54-56)
- {claim 8} a stationary blower (figure 3, reference 126)
- {claim 9} a radio frequency applicator (column 1, lines 54-56)
- {claim 10} a microwave applicator (column 1, line 29)
- {claim 13} the first and second heating element portions define a gap therebetween, the gap comprising a heat zone generated by the heating element (figure 3)
- {claim 14} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)
- {claim 19} the first and second heater element portions cooperatively form a microwave applicator (figure 3; column 1, line 29)
- {claim 22} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)
- {claim 24} the first and second heater elements comprise a microwave heater (column 1, line 29)
- {claim 25} the first and second heater elements comprise an RF heater (column 1, lines 54-56)

- {claim 27} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)
- {claim 29} the first and second heater elements comprise a microwave heater (column 1, line 29)
- {claim 30} the first and second heater elements comprise and RF heater (column 1, lines 54-56)
- {claim 31} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)
- {claim 34} the heat zone using microwave heating produced cooperative by the first and second heating elements (figure 3, reference 141, 151; column 1, line 29)
- {claim 35} generating the heat zone at opposing surfaces of the media (figure 3)
- {claim 36} generating the heat zone from RF heating produced cooperative by the first and second heating elements (column 1, lines 54-56)
- {claim 38} a drying apparatus on an ink carriage (column 1, lines 30-36); drying on two sides of a sheet (figure 3, reference 141 and 151)
- {claim 39} microwave energy source (column 1, line 29)
- {claim 40} RF energy source (column 1, lines 54-56)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Meyers et al into the carriages of Gandy et al so that each part of the bi-furcated carriage of Gandy et al also carries a heating element. The motivation for the skilled artisan in doing so is to gain the benefit of actively drying the media in

Art Unit: 2853

a rapid continuous manner so that no subsequent drying period is needed (column 2, lines 16-22). The combination is suggested by Meyers et al in its teachings that 1) a dryer can be put on a carriage and 2) a sheet can be dried on both sides (figure 3). The combination naturally suggests a first carriage holding a first heating element portion, a second carriage holding a second heating element portion, the heater portions being maintained in face-to-face opposition across the printzone, and the first and second heating element portions being scanned across the media.

2. Claims 3-4, 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Meyers et al (US Pat 6463674), as applied to claims 1-2, 5, 8-11, 13-17, 19-20, 22, 24-27, and 29-41, and further in view of Carreira et al (US Pat 5220346).

Gandy et al in view of Meyers et al further discloses:

- {claim 4} the heat zone scans synchronously with the carriage (naturally suggested in view of combination of Gandy et al and Meyers et al)
- {claim 18} first and second heater elements (Meyers et al figure 3, reference 141, 151)
- {claim 21} heating element is a microwave heating element (column 1, line 29)

Gandy et al, as modified, differs from the claimed invention in that it does not disclose:

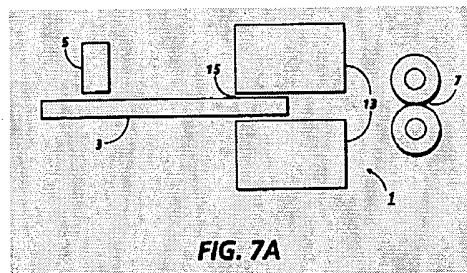
- {claim 3} the microwave heating element includes a bi-furcated waveguide spanning the first portion and the second portion of the heating element and defining a heat zone therebetween

Art Unit: 2853

- {claim 18} a microwave energy source and a first portion of a waveguide, a microwave load, and a second portion of a waveguide, the first and second waveguide portions together forming a waveguide directing microwave energy from the source to the load, the printzone occupies space between the first portion of the waveguide and the second portion of the waveguide
- {claim 21} at least one of the first carriage and the second carriage holding a microwave load and the other one of the first carriage and the second carriage supporting a microwave source

Carreira et al discloses:

- {claim 3} the microwave heating element includes a bi-furcated waveguide spanning the first portion and the second portion of the heating element and defining a heat zone therebetween (figure 7A, reference 13; column 10, lines 61-68)



- {claim 18} a microwave energy source and a first portion of a waveguide, a microwave load, and a second portion of a waveguide, the first and second waveguide portions together forming a waveguide directing microwave energy from the source to the load, the printzone occupies space between the first portion of the waveguide and the second portion of the waveguide (column 1, line 29;

Art Unit: 2853

figure 7A, reference 3, 13, 15; column 10, lines 61-68; microwave source and load are inherent to waveguide)

- {claim 21} at least one of the first carriage and the second carriage holding a microwave load and the other one of the first carriage and the second carriage supporting a microwave source (microwave load and source (column 1, line 29; figure 7A, reference 3, 13, 15; column 10, lines 61-68)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Carreira et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of enabling good print quality and minimal showthrough and strikethrough (column 4, lines 6-9). The combination naturally suggests a first carriage and second carriage with one holding a microwave load and the other holding a microwave source.

3. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Meyers et al (US Pat 6463674), as applied to claims 1-2, 5, 8-11, 13-17, 19-20, 22, 24-27, and 29-41, and further in view of Woo et al (US Pat 5645904).

Gandy et al in view of Meyers et al further discloses, with respect to claim 7, the heat zone scans synchronously with the carriage (naturally suggested in view of combination of Gandy et al and Meyers et al).

Gandy et al, as modified, differs from the claimed invention in that it does not disclose the radio frequency heating element includes as the first portion first electrodes and as the second portion second electrodes, a heat zone being positioned therebetween.

Woo et al discloses, with respect to claim 6, the radio frequency heating element includes as the first portion first electrodes and as the second portion second electrodes.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Woo et al into the invention of modified Gandy et al. The motivation for the skilled artisan in doing so is to gain the benefit of efficient heating (column 1, lines 16-18). The combination naturally suggests that a heat zone is positioned between electrodes.

4. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Meyers et al (US Pat 6463674) and Ort (US Pat 4340893).

Gandy et al discloses an inkjet printing mechanism, a reciprocating printing device projecting ink droplets therefrom along a print swath, the print swath having a print swath height (figure 1).

Gandy et al differs from the claimed invention in that it does not disclose a reciprocating bifurcated heating element projecting energy therefrom and applied as heat energy to media adjacent thereto along a heat swath height, the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element, the bifurcated heating element including a first portion maintained as taught above first side of the print swath and a second portion maintained a second side of the print swath in face-to-face opposition to the first portion.

Meyers et al discloses a reciprocating bifurcated heating element projecting energy therefrom and applied as heat energy to media adjacent thereto a heat swath height; the bifurcated heating element including a first portion maintained at a first side of the print swath and a second portion maintained at a second side of the print swath in face-to-face opposition to the first portion (figure 3, reference 131, 141).

Ort discloses the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element (figure 2, reference 33, 44, 45; it is clear from the figure that dryers are farther from the print surface than the face of the ink jet droplet emitter; looking at figure 2 from a vertical perspective, it is clear that the heat swath height is greater than the print swath height).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ort into the invention of Gandy et al in view of Meyers et al so that the heat swath height is greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element. The motivation for the skilled artisan in doing so is to gain the benefit of providing an ink which dries quickly on the record surface, but does not dry in the inkjet nozzle (column 1, lines 11-13).

5. Claims 1, 14, 22, 27, 31, 38, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandy et al (US Pat 5376957) in view of Ort (US Pat 4340893).

Gandy et al discloses:

- {claim 1} An inkjet printing mechanism, a media support (figure 1); a bi-furcated carriage which scans an inkjet printhead across the printzone, a first portion of the carriage located on a first side of the media when in the printzone, a second portion of the carriage being located on a second side of the media when in the printzone (figure 1, reference 23, 25)
- {claim 14} An inkjet printing mechanism, a printzone (figure 1); a first carriage located on a first side of the printzone, the first carriage supporting an inkjet printhead (figure 1, reference 23); a second carriage located on a second side of the printzone (figure 1, reference 25)
- {claim 22} A method of applying print imaging by ink droplet deposition on media and drying the print imaging, reciprocating a first carriage across the printzone; projecting from the first carriage ink droplets as the print imaging (figure 1); synchronously scanning a second carriage relative to the first carriage (column 5, lines 60-63)
- {claim 27} A printing method; placing media in a printzone for print imaging; reciprocating a first carriage across the printzone; projecting from the first carriage ink droplets as the print imaging (figure 1; column 3, lines 26-68; column 4, lines 1-6); synchronously scanning a second carriage relative to the first mentioned carriage (column 5, lines 60-63)
- {claim 31} A printing method; applying ink having an evaporable component to a print media (figure 1; abstract)

- {claim 38} An inkjet printing mechanism; means for reciprocating a carriage relative to a printzone, printing means (figure 1; column 5, lines 49-63)
- {claim 42} An inkjet printing medium comprising: a reciprocating printing device projecting ink droplets therefrom along a print swath, the print swath having a print swath height (figure 1)

Gandy et al differs from the claimed invention in that it does not disclose:

- {claim 1} a bi-furcated heating element supported by the carriage, a first portion of the heating element being carried by the first portion of the carriage, a second portion of the heating element being carried by the second portion of the carriage, the first and second heater elements being maintained in face-to-face relation across the print zone
- {claim 14} the first carriage supporting a first heater element portion; the second carriage holding a second heater element portion, the first and second heater element portions forming a heater element and being maintained in face-to-face-opposition across the printzone
- {claim 22} projecting from a first heater element on the first carriage radiant energy applied as heat energy to the media; the second carriage holding a second heater element cooperative with the first heater element to generate and apply the heat energy to the media, the first and second carriage being maintained in face-to-face relation with the media interposed therebetween
- {claim 27} projecting from a first heater element on the first carriage radiant energy applied as heat energy to the heat media; the second carriage holding a

heater element cooperative with the heater on the first carriage to apply the heat energy to the media, the first and second carriage being maintained in face-to-face relation with the media interposed therebetween

- {claim 31} thereafter, moving a heat zone across the media to accelerate evaporation of the evaporable component, the heat zone being generated by cooperative first and second heating elements moving synchronously and relative to the print media and cooperative to produce the heat zone, the first and second heating elements being maintained in face-to-face relation with the print media interposed therebetween
- {claim 38} means for applying heat energy to the media and supported by the carriage means, the means for applying heat energy being bifurcated and including cooperative first and second heater elements, the first heater element being positioned at a first side of the media and the second heater element being maintained in face-to-face opposition therewith at a second side of the media
- {claim 42} a reciprocating bifurcated heating element projecting energy therefrom and applied as heat energy to media adjacent thereto along a heat swath height, the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element, the bifurcated heating element including a first portion maintained at a first side of the print swath and a second portion maintained at a second side of the print swath in face-to-face opposition to the first portion

Ort discloses:

- {claims 1, 14, 22, 27, 31, and 38} a heater on a carriage (figure 2, reference 46)
- {claim 42} the heat swath height being greater than the print swath height whereby print imaging produced by the ink droplets receives the heat energy through at least a first and second reciprocation of the heating element (figure 2, reference 33, 44, 45; it is clear from the figure that dryers are farther from the print surface than the face of the ink jet droplet emitter; looking at figure 2 from a vertical perspective, it is clear that the heat swath height is greater than the print swath height); a heater on a carriage (figure 2, reference 46)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ort into the invention of Gandy et al, so that each carriage contains a heater, thus forming a bi-furcated carriage where there is a first carriage holding a first heating element portion, a second carriage holding a second heating element portion, the heater portions being maintained in face-to-face opposition across the printzone, and the first and second heating element portions being scanned across the media.

Response to Arguments

6. Applicant's arguments, see Appeal Brief, filed 12/22/03, with respect to the previous rejection(s) of claim(s) 1-11, 13-22, 24-27, and 29-42 have been fully considered and are persuasive. Therefore, prosecution of the case has been re-opened. This new rejection further clarifies the intent of the previous rejection to avoid misunderstandings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Stephen D. Meier
Primary Examiner